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jc511 U.S. PTO

03-13-00

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Attorney's Docket No. 238-4

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

jc511 U.S. PTO  
09/522877  
03/10/00

Assistant Commissioner for Patents  
**Box Patent Application**  
Washington, D.C. 20231

UTILITY PATENT APPLICATION TRANSMITTAL

Sir:

Transmitted herewith for filing is the patent application of:

First Named Applicant (or Applicants): **Günther Dürhammer**

Title of Application: **CIGARETTE**

**1. Type of Application (37 C.F.R. 1.53(b))**

This application is a(n):

Original (nonprovisional) application.

Continuing application:

Divisional       Continuation       Continuation-in-Part (CIP)

of Serial No. 08/ \_\_\_\_\_, filed on \_\_\_\_\_.

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**CERTIFICATION UNDER 37 CFR 1.10**

I hereby certify that this New Application Transmittal and the documents referred to as enclosed herein are being deposited with the United States Postal Service on this date, March 10, 2000, in an envelope as "Express Mail to Addressee" Mailing Label Number EL509431885US, addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Joyce Peterson

Name of person mailing paper

Joyce Peterson

Signature of person mailing paper

**2. Enclosed Papers Required to Obtain Application Filing Date under 37 CFR 1.53(b)**

3 Pages of specification  
1 Pages of claims  
1 Pages of Abstract  
0 Sheets of drawings       Formal       Informal

**3. Oath or Declaration**

Newly executed Oath or Declaration (original or copy) is enclosed.  
 Copy of Oath or Declaration from prior application 01 (37 C.F.R. 1.63(d)).  
 The entire disclosure of the prior application, from which a copy of the oath or Declaration is supplied, is considered as being a part of the disclosure of the accompanying application and is hereby incorporated by reference therein.  
 With Power of Attorney       Without Power of Attorney

**4. Additional Papers Enclosed**

Return Receipt Postcard (specifically itemized) (M.P.E.P. § 503).  
 Preliminary Amendment.  
 Information Disclosure Statement (37 CFR 1.98).  
 Form PTO-1449       Copies of IDS Citations  
 Nucleotide and/or Amino Acid Sequence Listing computer-readable copy, paper copy, and statement verifying identity of computer-readable and paper copies.  
 Certified Copy of Priority Document(s).  
 Verified translation of non-English language application (37 C.F.R. 1.52(d)).  
 Other: \_\_\_\_\_.

**5. Assignment**

Newly Executed assignment with Recordation Cover Sheet (Form PTO-1595).  
 Copy of Assignment from prior application No. 08/ \_\_\_\_\_.

## 6. Fee Calculation (37 CFR 1.16)

### Regular Application (37 CFR 1.16(a))

Basic Fee \$760.00

## FEES FOR CLAIMS AS FILED

Number filed	Number extra		Rate		
<b>Total Claims</b> (37 CFR 1.16(c))	<b>14</b>	- 20	=	× \$ 18.00	= \$ 0.00
<b>Independent Claims</b> (37 CFR 1.16(b))	<b>2</b>	- 3	=	× \$ 78.00	= \$ 0.00
<b>Multiple Dependent Claims</b> (37 CFR 1.16(d))			+ \$ 260.00	=	\$ 0.00

**Fee Calculation for Extra Claims      \$ 0.00**

- Amendment canceling extra claims enclosed.
- Amendment deleting multiple-dependencies enclosed.

Total Filing Fee Calculation **\$690.00**

## 7. Small Entity Statement

[ ] Verified Statement that this is a filing by a small entity under 37 CFR 1.9 and 1.27:

is enclosed.  will follow.

[ ] Status as a small entity was claimed in prior application 08/\_\_\_\_, from which benefit is being claimed for this application under:

[ ] 35 U.S.C. 119(e),  
[ ] 35 U.S.C. 120,  
[ ] 35 U.S.C. 121,  
[ ] 35 U.S.C. 365(c),

and which status as a small entity is still proper and desired.

[ ] A copy of the verified statement in the prior application is enclosed.

**Filing Fee Calculation (50% of Filing Fee calculated in Item 6 above)**

\$

**8. Fee Payment**

Not enclosed. No filing fee is to be paid at this time.

Enclosed:

<input checked="" type="checkbox"/>	Basic filing fee (Item 6 or 7 above)	\$ <u>690.00</u>
<input checked="" type="checkbox"/>	Fee for recording Assignment (\$40.00 (37 CFR 1.21(h)))	\$ <u>40.00</u>
<input type="checkbox"/>	Processing and retention fee (\$130.00 (37 CFR 1.53(d) and 1.21(l)))	\$ _____
	Total fees enclosed	\$ <u>730.00</u>

**9. Method of Payment of Fees**

Check in the amount of \$730.00.

Charge Deposit Account No. 08-2461 in the amount of \$ \_\_\_\_\_.  
A duplicate of this transmittal is enclosed.

**10. Authorization to Charge Additional Fees**

The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Deposit Account No. 08-2461:

37 CFR 1.16(a), (f), or (g) (filing fees)  
 37 CFR 1.16(b), (c), and (d) (presentation of extra claims)  
 37 CFR 1.16(e) (surcharge for filing the basic fee and/or declaration at a date later than the filing date of the application)  
 37 CFR 1.17 (application processing fees)

A duplicate of this transmittal is enclosed.

**11. Instructions as to Overpayment**

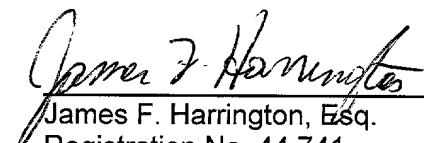
Credit Deposit Account 08-2461.  Refund.

**12. Correspondence Address**

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PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s) Günther Dürhammer

Examiner: Unassigned

Serial No.: Unassigned

Group Art Unit: Unassigned

Filed: Herewith

Docket: 283-4

For: CIGARETTE

Dated: March 10, 2000

Assistant Commissioner for Patents  
Washington, DC 20231

*I hereby certify this correspondence is being deposited with the United States Postal Service as Express Mail No. EL509431885US, postpaid in an envelope, addressed to:*

*Assistant Commissioner for Patents, Washington, D.C.*

*20231 on March 10, 2000*

*Dated: 3/10/00 Joyce Peterson*

**PRELIMINARY AMENDMENT**

Sir:

Prior to examination on the merits, please amend the above-identified application as follows:

**IN THE SPECIFICATION:**

On page 1, before line 1,

please add the following title:

**--CIGARETTE--.**

On page 1, after the title and  
before line 1,

please add the following:

**--BACKGROUND OF THE INVENTION--.**

On page 1, line 1,

please delete "1".

On page 1, line 31,

please add the following:

**--SUMMARY OF THE INVENTION--.**

On page 2, line 8,

please add the following:

**--DETAILED DESCRIPTION OF  
INVENTION--**

On page 4, line 1,

delete "Claims" and insert **--WHAT IS  
CLAIMED IS:--**

On page 5,

delete the Abstract and insert therefor:

**--ABSTRACT**

A cigarette is provided which includes a tobacco strand wrapped with a layer of paper having a water repellent impregnation made from a cellulose derivative.--

**IN THE CLAIMS:**

Please delete Claims 1-5.

Please add the following claims:

6. A cigarette comprising a tobacco strand wrapped with a layer of paper having a water repellent impregnation made from a cellulose derivative, wherein said cellulose derivative is applied in several layers and provides air permeability of at least 20 Coresta units.
  
7. A cigarette as described in Claim 6, wherein the cellulose derivative is ethyl cellulose.
  
8. A cigarette as described in Claim 6, wherein the cellulose derivative provides air permeability of at least 50 Coresta units.
  
9. A cigarette as described in Claim 6, wherein the cellulose derivative is applied on both sides of the paper.

10. A cigarette as described in Claim 6, wherein the cellulose derivative is applied in a quantity of at least 1 g/m<sup>2</sup>.

11. A cigarette as described in Claim 6, wherein the cellulose derivative is applied by means of a coating roller in a gravure process.

12. A cigarette as described in Claim 6, wherein the wrapper is composed of only one layer of paper.

13. A cigarette wrapper comprising a water repellent impregnation made from a cellulose derivative, wherein said cellulose derivative is applied in several layers and provides air permeability of least 20 Coresta units.

14. A cigarette wrapper as described in Claim 13, wherein said cellulose derivative is ethyl cellulose.

15. A cigarette wrapper as described in Claim 13, wherein said cellulose derivative provides air permeability of at least 50 Coresta units.

16. A cigarette wrapper as described in Claim 13, wherein the cellulose derivative is applied on both sides of the paper.

17. A cigarette wrapper as described in Claim 13, wherein the cellulose derivative is applied in a quantity of at least 1 g/m<sup>2</sup>.

18. A cigarette wrapper as described in Claim 13, wherein the cellulose derivative is applied by means of a coating roller in a gravure process.

19. A cigarette wrapper as described in Claim 13, wherein the wrapper is composed of only one layer of paper.

## REMARKS

The present application claims priority to European Application No. 99105581.5 filed 13 March 1999. Headings have been added to the specification in accordance with U.S. practice. Claims 1-5 have been cancelled and re-written as Claims 6-12 to place the claims in a form which is in compliance with U.S. practice. New Claims 13-19 have been added to claim a cigarette wrapper as taught in the application.

Inasmuch as the present amendment does not introduce new subject matter and places the application in better condition for consideration on the merits, entry of the Amendment is respectfully requested.

Respectfully submitted,

  
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Attorney for Applicant

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5 The invention is based on the problem of avoiding spotting on the wrappers of cigarettes.

10 The buyers of cigarettes consider the spotless white appearance of a cigarette as an indication of quality. Even if this opinion is not particularly correct – in hot, humid climates cigarettes can show discolouration even after a short period of storage, which does not affect the smoke flavour – manufacturers have to focus upon market 15 expectations.

15 Spotting of cigarette paper can be explained in that dissolved substances contained in the tobacco can penetrate the paper at the points of contact between the paper and the tobacco particles, as said paper is both porous and hydrophilic.

20 It would be conceivable to reduce spotting on cigarette paper in that said paper is coated with any substances that would make the paper completely impervious. Such coatings have been proposed in order to effect rapid extinguishing of discarded cigarettes. In order to be able to control the content of different substances contained 25 in the smoke, however, the cigarette manufacturer is generally interested in a certain degree of air permeability of the cigarette paper. The problem is consequently to, on the one hand, keep the paper permeable for air, and on the other hand to reduce the permeability for dissolved cigarette ingredients.

25 For solving the problem, US-A 5,143 099 proposed to form the cigarette wrapper using two layers of paper, wherein the inner wrapper is provided with a very high degree of permeability, so that the overall permeability remains sufficient. In this context, the possibility of making the inner wrapper water repellent by adding 0.5% 30 alkyl ketene dimer was mentioned.

In comparison with the prior art described, the object of the invention is to make the

use of two layers of paper superfluous, this being by means of an impregnating agent that is harmless and changes the smoke flavour as little as possible.

It was unexpected that providing the cigarette with a wrapper that comprises a layer of 5 paper with water repellent impregnation made from a cellulose derivative, in particular of ethyl cellulose, would lead to a solution of the object. EP 0 419 981 does describe such a cigarette, in which, however, the air permeability is below 5 Coresta units.

The invention is based on the recognition that the impregnation can be sufficiently thin 10 to retain the desired air permeability, if it is applied in several layers. It is thus provided according to the invention that the cellulose derivative is applied in several layers in order to obtain an air permeability in the wrapper of at least 20, preferably 50 Coresta units.

15 Different cellulose derivatives per se satisfy the physical criteria required with respect to air permeability and water permeability in the impregnated paper, for example, sufficiently highly derived cellulose ether and cellulose ester (for example, nitrocellulose). Ethyl cellulose is preferred, however, as it is harmless – it complies with the German regulations – and makes practically no change to the smoke flavour.

20

Further details of the invention will be discussed hereinafter with reference to comparative tests.

25 Cigarette papers with a substance of 26g/m<sup>2</sup> were coated, in a gravure process by means of a coating roller, with cellulose azetopropionate (CAP) or with cellulose azetobutyrate (CAB) or with ethyl cellulose (EC). The amount applied was approximately 0.7 g/m<sup>2</sup>. Cigarettes were manufactured with the cigarette paper manufactured in this way.

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In order to test their spotting tendency, the cigarettes were stored packaged and unpackaged at either 20°C and 60% relative humidity or 30°C and 80% relative

humidity. Examination for spotting (in each case 100 cigarettes) was carried out immediately after production and after 24 and 48 hours. An evaluation was made according to spot size and number, and the results were converted, by means of weighting, into a point system.

5

The evaluation produced the following results:

Coating with 0.7 g EC	572 points
Coating with 0.7 g CAP	223 points
Coating with 0.7 g CAB	77 points

10

Although ethyl cellulose coated paper showed a comparatively strong tendency for spotting (large number of spots), the further development was carried out with this material, as an undesired change in the smoke character was determined with CAP and CAB. Even with the use of EC coated paper, a significantly lower spotting frequency was nevertheless determined, compared with uncoated paper. After approximately one month, however, the cigarettes manufactured using paper coated with EC showed no dark spots, whereas large yellow spots appeared on those with uncoated paper. This is probably because coloring agents penetrate the paper through flaws in the coating, the spreading of which agents is prevented by the coating. Due to these observations, the tests were repeated with twice-coated paper, that is to say with cigarette paper loaded with 1.4 g/m<sup>2</sup>. With this, the spotting tendency decreased, according to the method of calculation described hereinabove, to 56 points, that is to say it reduced by the power of 10 compared to the single coating. This excellent result was confirmed in long-term testing.

25

It is to be emphasised in particular that the success described was obtained even though the porosity of the paper, which was 50 Coresta units before coating, was still 20 Coresta units after coating. Initial tests with more porous paper as the starting material confirm that even with a final porosity of 50 Coresta units, the radical reduction in the tendency to spot, according to the invention, was obtained. (One Coresta unit (CU) indicates how many cm<sup>2</sup> of air flow per minute through an area of 1 cm<sup>2</sup> of paper under pressure of a 10 cm head of water.)

## Claims

5        1. Cigarette, the tobacco strand of which is wrapped around with a layer of paper with water repellent impregnation made from a cellulose derivative, preferably of ethyl cellulose, wherein in order to obtain air permeability in the wrapper of at least 20 Coresta units, preferably at least 50 Coresta units, the cellulose derivative is applied in several layers.

10

2. Cigarette according to claim 1, wherein the cellulose derivative is applied on both sides of the paper.

3. Cigarette according to claim 1, wherein the cellulose derivative is applied in a quantity of at least 1 g/m<sup>2</sup>.

15        4. Cigarette according to claim 1, wherein the cellulose derivative is applied by means of a coating roller in a gravure process.

5. Cigarette according to claim 1, wherein the wrapper is composed of only one layer of paper,

20

25

**Abstract**

Cigarette, the wrapper of which comprises a layer of paper with water impregnation  
5 made from a cellulose derivative.



I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

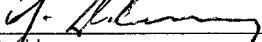
**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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